Application No.: 10/613,912 Docket No. D03074

AMENDMENTS TO THE CLAIMS

Please amend the claims as follows:

Claims 1-9 (presently canceled)

10. (presently amended) A method for implementing a finite impulse response filter based upon ~~achieving~~ an averaged result of ~~on~~ packed binary values A_1, A_2~~, A_3, A_4~~, the method using a *PAVG* instruction that computes a rounded-up average on the ~~first and second sets of~~ packed values A_1 and A_2 to produce a resulting set of packed averages, wherein B ~~B_1~~ $= PAVG(A_1, A_2$~~) and $B2 = PAVG(A_3, A_4)$~~, the method comprising deriving a result, R, as

$$\cancel{R = \begin{cases} PAVG(B_1, B_2) - (B_1 \wedge B_2) \,\&\, ONE \text{ when } E = 0 \\ PAVG(B_1, B_2) \text{ when } E = 1 \end{cases}}$$

$$(A_1 + A_2 - 2^* ONE) >> 1 = PAVG(A_1 + A_2) - ONE - (A_1 \wedge A_2)\ \&\ ONE),$$

$$(A_1 + A_2 - ONE) >> 1 = CLIP(\ PAVG(A_1 + A_2) \sim ONE),$$

$$(A_1 + A_2) >> 1 = PAVG(A_1 + A_2) - (A_1 \wedge A_2)\ \&\ ONE),$$

$$(A_1 + A_2 + 2^* ONE) >> 1 = PAVG(A_1 + A_2) + (\sim (A_1 \wedge A_2)\ \&\ ONE),$$

wherein *ONE* is a value with a one in the least significant bit position of one or more packed values and CLIP ( ) truncates the result to the appropriate packed bits ~~wherein $E = 1$ when both $(A_1 + A_2 + ONE)$ and $(A_3 + A_4 + ONE)$ are odd integers.~~

Claims 11-25 (presently canceled)

26. (new) A method for implementing a finite impulse response filter based upon an averaged result of packed binary values A_1, A_2, A_3, A_4, A_5, A_6, A_7, A_8, the method using a *PAVG* instruction that computes

a rounded-up average on a first, second, third and fourth sets of packed values and subsequent averages of these rounded-up averages to produce a resulting set of packed averages, wherein

$$B_1 = PAVG(A_1 + A_2),\ B_2 = PAVG(A_3 + A_4),\ B_3 = PAVG(A_5 + A_6),\ B_4 = PAVG(A_7 + A_8), \text{ and}$$

$$C_1 = PAVG(B_1 + B_2),\ C_2 = PAVG(B_3 + B_4),$$

the method comprising deriving a result, R, as

$$R = PAVG(C_1, C_2) - ((C_1 \wedge C_2) \mid Z \mid T) \,\&\, ONE,$$

wherein ONE is a value with a one in the least significant bit position of one or more packed values and wherein

$$T = U \,\&\, V \,\&\, W \,\&\, ((EB_1 \,\&\, EB_2) \mid (EB_3 \,\&\, EB_4)),$$

$$EB_1 = (A_1 \wedge A_2),\ EB_2 = (A_3 \wedge A_4),\ EB_3 = (A_5 \wedge A_6),\ EB_4 = (A_7 \wedge A_8),$$

$$EC_1 = (B_1 \wedge B_2),\ EC_2 = (B_3 \wedge B_4),$$

$$U - EC_1 \mid EC_2,$$

$$V - EB_1 \mid EB_2,$$

$$U - EC_1 \mid EC_2,$$

$$W - EB_3 \mid EB_4,$$

$$X = V \mid W,$$

$$Y = U \mid X, \text{ and}$$

$$Z = (EC_1 \,\&\, EC_2 \,\&\, X).$$

27. (new) A method for implementing a finite impulse response filter based upon an averaged result of packed binary values $A_1, A_2, A_3, A_4, A_5, A_6, A_7, A_8$, the method using a $PAVG$ instruction that computes a rounded-up average on a first, second, third and fourth sets of packed values and subsequent averages of these rounded-up averages to produce a resulting set of packed averages, wherein

$$B_1 = PAVG(A_1 + A_2),\ B_2 = PAVG(A_3 + A_4),\ B_3 = PAVG(A_5 + A_6),\ B_4 = PAVG(A_7 + A_8), \text{ and}$$

$C_1 = PAVG(B_1 + B_2)$, $C_2 = PAVG(B_3 + B_4)$,

the method comprising deriving a result, R, as

$R = PAVG(C_1, C_2) - ((ED \mid Y) \;\&\; ONE) - (U \;\&\; V \;\&\; ED \;\&\; ONE\,)$,

wherein ONE is a value with a one in the least significant bit position of one or more packed values and wherein

$P = (EB_3 \;\&\; EB_4)$,

$U = EB_1 \;\&\; EB_2 \;\&\; P$,

$V = EC_1 \;\&\; EC_2$,

$W = (B_3 \wedge B_4)$,

$U = EB_3 \mid EB_4$,

$X = (EC_1 \mid EC_2) \;\&\; ((EB_1 \;\&\; (EB_2 \mid W\,)) \mid (EB_2 \;\&\; W\,) \mid P)$,

$Y = (X \mid V \mid U\,)$, and

$ED = (C_1 \wedge C_2)$.

28. (new) A method for implementing a finite impulse response filter based upon an averaged result of packed binary values A_1, A_2, A_3, A_4, A_5, A_6, A_7, A_8, the method using a $PAVG$ instruction that computes a rounded-up average on a first, second, third and fourth sets of packed values and subsequent averages of these rounded-up averages to produce a resulting set of packed averages, wherein

$B_1 = PAVG(A_1 + A_2)$, $B_2 = PAVG(A_3 + A_4)$, $B_3 = PAVG(A_5 + A_6)$, $B_4 = PAVG(A_7 + A_8)$, and

$C_1 = PAVG(B_1 + B_2)$, $C_2 = PAVG(B_3 + B_4)$,

the method comprising deriving a result, R, as

$R = PAVG(C_1, C_2) - (ED \mid U \mid V\,((EC_1 \mid EC_2) \;\&\; W\,)) \;\&\; ONE - ED \;\&\; U \;\&\; V \;\&\; ONE$,

wherein ONE is a value with a one in the least significant bit position of one or more packed values and wherein

$P = (EB_1 \mid EB_4)$,

$Q = (EB_3 \mid EB_2)$,

$U = (EB_2 \,\&\, EB_3 \,\&\, P) \mid (EB_4 \,\&\, EB_1 \,\&\, Q)$

$V = EC_1 \,\&\, EC_2$,

$W = P \mid Q$, and

$ED = (C_1 \wedge C_2)$.

29. (new) A method for implementing a finite impulse response filter based upon an averaged result of packed binary values $A_1, A_2, A_3, A_4, A_5, A_6, A_7, A_8$, the method using a $PAVG$ instruction that computes a rounded-up average on a first, second, third and fourth sets of packed values and subsequent averages of these rounded-up averages to produce a resulting set of packed averages, wherein

$B_1 = PAVG(A_1 + A_2)$, $B_2 = PAVG(A_3 + A_4)$, $B_3 = PAVG(A_5 + A_6)$, $B_4 = PAVG(A_7 + A_8)$, and

$C_1 = PAVG(B_1 + B_2)$, $C_2 = PAVG(B_3 + B_4)$,

the method comprising deriving a result, R, as

$R = PAVG(C_1, C_2) - (ED \mid U \mid W) \,\&\, ONE - ED \,\&\, ((W \,\&\, V) \mid Z) \,\&\, ONE$,

wherein ONE is a value with a one in the least significant bit position of one or more packed values and wherein

$P = (EB_3 \mid EB_4)$,

$Q = (EB_3 \mid EB_4)$,

$U = (EB_1 \,\&\, (EB_2 \mid Q)) \mid (EB_2 \,\&\, Q) \mid P$,

$V = EB_1 \,\&\, EB_2 \,\&\, P$,

$W = EC_1 \mid EC_2$,

$Z = (EC_1 \,\&\, EC_2 \,\&\, U)$, and

$ED = (C_1 \wedge C_2)$.

30. (new) A method for implementing a finite impulse response filter based upon an averaged result of packed binary values A_1, A_2, A_3, A_4, A_5, A_6, A_7, A_8, A_9, A_{10}, A_{11}, A_{12}, A_{13}, A_{14}, A_{15}, A_{16}, the method using a $PAVG$ instruction that computes a rounded-up average on a first through eighth sets of packed values and subsequent averages of these rounded-up averages to produce a resulting set of packed averages, wherein

$$B_1 = PAVG(A_1 + A_2), B_2 = PAVG(A_3 + A_4), B_3 = PAVG(A_5 + A_6), B_4 = PAVG(A_7 + A_8),$$

$$B_5 = PAVG(A_9 + A_{10}), B_6 = PAVG(A_{11} + A_{12}), B_7 = PAVG(A_{13} + A_{14}), B_8 = PAVG(A_{15} + A_{16}),$$

$$C_1 = PAVG(B_1 + B_2), C_2 = PAVG(B_3 + B_4), C_3 = PAVG(B_5 + B_6), C_4 = PAVG(B_7 + B_8), \text{ and}$$

$$D_1 = PAVG(C_1 + C_2), D_2 = PAVG(C_3 + C_4),$$

the method comprising deriving a result, R, as

$$R = PAVG(D_1, D_2) - ((ET_1 \,\&\, ET_2) \mid \sim E \,) \,\&\, W \,)) \,\&\, (ET_1 \,\&\, ET_2) \mid E \,)$$

$$\&\, ONE - (D_1 \wedge D_2) \,\&\, \sim (ET_1 \wedge ET_2 \wedge E \,) \,\&\, ONE,$$

wherein ONE is a value with a one in the least significant bit position of one or more packed values.